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ABSTRACT

This study examined five representative medical schools for approaches to teaching integrated approaches to health care. Traditionally medical schools have taught from a biomedical, technological approach. The study used a qualitative, multiple case study design to explore which medical schools were attempting integrated health care education. On site visits to the five medical schools, data were collected through interviews with administrators, faculty, and students and review of documents. Analysis involved examining the data from each school and then integrating these data across schools. The study was based on ideas about curricula (i.e., integrated, patient-centered, developmental, and population based) thought to help students learn an integrated approach to patient care. Findings suggest that teaching an integrated approach to care involves attention to four relationships within medicine and medical education: (1) the physician-patient relationship; (2) the physician-community relationship; (3) the relationship of physician to other practitioners; and (4) the faculty-student relationship. Several institutional factors, including a shared mission or philosophy, effective leadership, and increased attention to primary care facilitate the maintenance of programs that address an integrated approach to care. (Contains 27 references.) (JB)

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Expanding the Biomedical Model:
Case Studies of Five Medical Schools

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Introduction

The hallmark of medical education for the past half century has been its predominant emphasis on biomedical science and technology (Ludmerer, 1985; Schroeder et al., 1989; Tarlov, 1992). This orientation has been congruent with the conceptualization of health as the absence of disease and has resulted in remarkable progress in biomedical research and in the development of technologies for the diagnosis and treatment of disease (Freymann, 1989; Tarlov, 1992). Realization is growing, however, that an exclusively biomedical focus cannot adequately address the broad range of contemporary health care problems, whose complex etiologies and management reflect a multiplicity of interconnected personal, social, and environmental influences on health and illness (Schroeder et al., 1989; White, 1988; White & Connelly, 1992). Health is being reconceptualized in several ways. The World Health Organization, for example, has defined health not as freedom from physical disease or infirmity but rather as complete physical, psychological, and social well-being (WHO, 1990). Others, finding the WHO definition unrealistic, especially in light of today's chronic disease burden, define health as a process by which individuals strive to maintain their functional status to as great an extent as possible in the face of changes in themselves and within the context of their environment (Antonovsky, 1987; Toombs, 1992). These reconceptualizations of health suggest the need for additional, nonbiomedical health care strategies. A major question for medical practice and education today is whether to continue to limit the profession's focus to the biomedical sciences and disease management or to expand its role in fostering health through an integration of the biologic and social sciences (Tarlov, 1992).

Some scholars believe that schools will have to develop programs that help students learn to approach health care in an integrated, comprehensive manner that addresses the complex interaction of psychological, social, and physical factors in health and illness (e.g., Tarlov, 1992; Council on Graduate Medical Education, 1992). The Pew Health Professions Commission has delineated a set of competencies that it believes will be needed by practitioners in the future. Many of these competencies address non-biomedical issues, such as environmental, socioeconomic, and behavioral factors affecting the health of individuals and populations (O'Neil, 1993). Adding courses in the social sciences and humanities is not the answer. Not only are medical curricula already overfull, but didactic treatment of sociological and psychological issues and concepts cannot adequately prepare students for practice. Preliminary work has explored how medical schools might expand their focus beyond the biomedical model (Tresolini & Shugars, 1994), but little comprehensive information is available regarding schools that have explicitly embraced such an expansion. The purposes of this study were (a) to learn more about the curricula in these schools and (b) to begin to form ideas about how best to organize, support, and extend programs that teach students a more integrated approach to the practice of medicine. It is hoped that this information will be of help to those schools that choose to expand beyond the biomedical model as well as to organizations that intend to provide assistance and support for those schools.

Perspectives

A number of models or approaches address the extension of medical science and health care practice beyond the biomedical model to integrate psychological and social factors in health. These include the biopsychosocial model (Engel, 1977), other models drawn from systems theory (e.g., deVries, 1981), biobehavioral sciences approaches including psychoneuroimmunology (e.g., Ader et al., 1991; Hamburg et al., 1982; House et al., 1988), the infomedicine model (Foss & Rothenberg, 1987), the patient-centered clinical method (Levenstein, 1988; McWhinney, 1988, 1989), and the population perspective (Showstack et al., 1992; White & Connelly, 1992). In a recent study (Tresolini & Shugars, 1994), medical faculty respondents described an integrated health care model that embraces equally both "micro" and "macro" approaches to widening the scope of health care. The micro approach focuses on the individual patient's physiological, psychological, and social characteristics that interact to affect responses to states of health and illness, and consequently focuses primarily on the physician-patient relationship. The macro approach looks primarily at the social, economic, political, and environmental contexts of

individuals, groups, and communities and the ways in which these contexts affect health and illness, and thus suggests the importance of the physician-community relationship.

Various ways to teach medical students an integrated approach to health care that expands the biomedical model also have been described in the literature. White (1988) suggests eight broad initiatives, which include attention to interviewing and communication skills, the behavioral sciences and humanities, primary care, the physician as therapeutic agent, and the creation of an environment of respect for patients. Others focus principally on teaching medical interviewing or patient relationship skills (e.g., Lipkin et al., 1984; Branch et al., 1991) or on teaching population-based strategies for improving the health of the public (Showstack et al., 1992). Tresolini and Shugars (1994) found that medical faculty envisioned curricula ideally suited to teach an integrated approach to care to be patient-centered; integrated in their treatment of clinical and basic science; attentive to the developmental needs of students, both personal and professional; and population-based.

Research Questions

The following questions guided this study:

- What institutional factors or characteristics are associated with teaching and learning an integrated approach to patient care?
- In what ways do medical schools help students learn an integrated approach to patient care?
- What factors or characteristics facilitate or impede the introduction and maintenance of integrated programs?

Method

Design

A qualitative, multiple case study design was chosen as the most appropriate means of conducting an initial exploration of the ways in which medical schools are attempting to address the teaching of a more comprehensive approach to care. This design allows an examination of the characteristics of individual cases, but--more important to our purposes--it permits us to synthesize the lessons from them all (Yin, 1989). Site visits to five medical schools were made, with data collected through interviews with administrators, faculty, and students and review of documents related to the institutions and curricula. Analysis involved examining the data from each school and then integrating these data across schools.

Sources of data

Purposeful sampling (Patton, 1980) was used to select medical schools and interviewees within each school. Twenty-two expert medical faculty from 17 schools were asked to name the schools that they considered excellent in helping students learn a more comprehensive or integrated approach to patient care. The six schools that were named most frequently (a total of 15 were named) were sent letters describing the proposed study and requesting permission to visit. Five of the six agreed to participate. Following are some of the characteristics of the five schools: four are public and one is private; four are American (from the southeast, northeast, mid-west, and west) and one is Canadian; all have small to mid-sized student enrollment; only one has a problem-based curriculum in the first two years. Two of the schools were established more than 70 years ago; the remaining three since 1960.

A one to two-day visit was made to each school by one or two investigators during a three-month period from late February to late May 1993. For each school, the primary investigator explained the study to the academic dean or alternate contact person, who was asked to identify as interviewees (1) those administrators and faculty most knowledgeable about teaching an integrated approach to care, and (2) a group of students and/or residents. The constellation of interviewees differed slightly from school to school, but typically included the academic dean; faculty from the

basic sciences, humanities, internal medicine, family medicine, pediatrics, and psychiatry; students from all four years; and residents in medicine and family medicine. At one school, the site visit focused more narrowly on the Department of Family Medicine. Interviews there were with family medicine faculty and residents, the medical school dean, and the dean of undergraduate medical education.

At each school, 11 to 26 semi-structured interviews, each of one-half to one hour duration, were conducted. Interview guides consisting of open-ended questions were developed, reviewed by educational researchers, pilot-tested, and revised prior to use. Four guides were used, each slightly different from the others and each developed specifically for either administrators, faculty, students, or residents. Issues addressed in the interviews included the following: aspects of the curriculum that are most influential in teaching students about the interaction of biological, psychological, and social factors in health; how faculty help students learn an integrated approach to care; factors that facilitate or serve as barriers to the development of programs that teach an integrated approach to care or the learning of such an approach; factors that distinguish curricula that address an integrated approach from those that do not; expected outcomes of the curriculum with regard to student behavior or attitudes; and students' and residents' views of their most significant or influential learning experiences.

Interviewees were asked for copies of relevant documents. Documents collected included school catalogs, program descriptions, course syllabi, reading lists, brochures, research reports, reports of institutional demographics, mission statements, and articles written or deemed important by interviewees.

Analysis

An initial framework for analysis was formed by ideas about curricula thought to be ideally suited to helping students learn an integrated approach to care, i.e., curricula that are patient-centered, integrated, developmental, and population-based (Tresolini & Shugars, 1994). Within this framework, the constant comparative method (Strauss & Corbin, 1990) was used during and after data collection, with repeated readings of interview notes, transcriptions, and documents to examine elements within the data, find similarities and differences, and identify themes and categories. Analysis proceeded in an iterative fashion, with continual checking and revision throughout the course of the study. A team of four researchers, including the two who had conducted the site visits, analyzed the data. A preliminary report of findings was sent to twelve administrators and faculty who had participated as interviewees, including the academic dean or other contact person at each of the five schools. They were asked to review the report and provide feedback on its accuracy and validity. The reviewers indicated general agreement with both program descriptions and analysis. They made several suggestions for ways to clarify certain points, and these clarifications were incorporated in the final report.

Results

Institutional factors associated with an integrated approach to patient care

The most striking characteristic--present in each of the five schools--is the strong presence of an explicitly stated mission, philosophy, or theoretical model that embraces and advances a more integrated approach to care and forms the foundation for the curriculum. In some cases, the mission or philosophy is stated in the school catalog, while in others it appears in writing in course or program descriptions, papers written by faculty, or other materials. More importantly, however, in every school, the mission or philosophy was referred to by almost every interviewee, whether student, resident, faculty member, or administrator. As one faculty member said, "The people who come to visit us seem to say, 'You all seem to think the same way.'" At another school, a faculty member referred to the school's guiding philosophy as "a baseline for faculty." The mission or philosophy was cited often by faculty and administrators as the touchstone for decision-making related to student selection and curriculum development, and by students and

residents as critical in their choice of medical school and career. As one interviewee pointed out, however, "no institution is a pure culture and the outcomes for individual learners will to a degree be a function of their specific experiences."

Although each school's mission or philosophy is unique, similarities exist. Service is a major theme: all of the schools are dedicated to serving the health care needs of a defined population or geographic region. Three have a strong orientation toward producing primary care practitioners for the underserved within that population or region. As such, they center their curricula on the health care needs of the individuals and communities that they serve. An important criterion for student selection in one of these schools is a demonstrated commitment to serving the community. In two of the schools, the patient-centered clinical method developed within the specialty of family medicine plays a major role (Levenstein, 1988; McWhinney, 1988, 1989). Finally, one school also has as its underlying philosophy the biopsychosocial model explicated by Engel (1977), which views health as the result of the interaction of the physical, social, psychological, and contextual systems of the patient. As stated in the school catalog, the curriculum "is patient-centered and emphasizes the need for students to understand how deviations from health and responses to treatment reflect both psychosocial and biological forces." In each of the three younger schools, i.e., those established around 1960 or later, the service mission parallels the reason for the school's founding--providing medical services to the population of the region. At the two older schools, each established more than 70 years ago, biomedical research traditions are strong. Patient-centered and biopsychosocial approaches at those schools have grown out of the work of faculty members within the last few decades.

Except for the universal presence of a strong mission or philosophy, the schools were otherwise diverse, with varying undergraduate curriculum structures and planning processes. Four of the schools have the traditional format of two years of basic science followed by two years of clinical science. Within this structure, however, community preceptorships, case-based learning, and other experiences provide opportunities for development of clinical knowledge and skills within the basic science years. The fifth school had, at the time of our visit, a traditional track and a parallel problem-based track, which have since been merged into one. The problem-based track included extensive clinical experience and case-based learning in the first two years, with students joining with traditional track students for the clinical years. Curriculum planning at the five schools ranges along a continuum from centralized within the dean's office through departmentally-based. Cross-departmental committees that are used at some of the schools either take responsibility for organizing the entire curriculum or work to supplement, enrich, or coordinate aspects of it, including, for example, training in ambulatory care or in biopsychosocial medicine. At one school, where we focused more specifically on the activities of the Department of Family Medicine, the curriculum has a strong biomedical, tertiary care focus, but the family medicine faculty have become increasingly involved in predoctoral curriculum and course development and in faculty development, leading to a growing presence of patient-centered content and attention to student development.

Ways to help students learn an integrated approach

Within the great variety of ways in which students and residents at these five schools learn about the integration of psychological, social, and biological factors in health care, four major threads were apparent. These schools, with varying degrees of emphasis and in various ways, attend to four relationships within which a more comprehensive range of influences on health can be addressed: the physician-patient relationship, the physician-community relationship, the relationship of physician to other practitioners, and the faculty-student relationship. The *relationship of physician to patient* is addressed in the classroom through case-based learning, integration of clinical content in basic science courses, and explicit teaching of patient interviewing, relationship-building, and ethical issues in patient care. Research and development with regard to the patient-centered clinical method or biopsychosocial approach to patient care and how best to teach these methods to students are important activities in two of the schools that we visited. In some schools, patients are brought to the classroom to discuss their illnesses. Human

development throughout the life span is addressed as well, so that students and residents can learn to recognize "the patient's position in the life cycle" as well as how his or her own position in the life cycle affects interactions with patients. In some schools, Balint groups are used to further explore the physician-patient relationship.

With regard to clinical learning, clinical experiences beginning early in the undergraduate medical curriculum are important, as are clinical experiences in community settings close to where patients live and work. Longitudinal (six month to two and one-half years) placements in community health centers allow students and residents to develop long-term relationships with patients. Through these experiences, students and residents learn to focus on the patient as a person rather than more discretely on the disease state within the person. They also learn about multiple interacting influences on an individual's health and how they can be addressed within the doctor-patient relationship. As one resident noted:

> I'm starting to find that what makes a good doctor is somebody that's able to listen, to be able to hear what the patient is saying and being able to look at them as a person and how things are affecting them. And a lot of the complaints that you get coming in--there are a lot of psychological and sociological problems that come in that they really don't teach about in the hospitals.

In several schools, videotaping or direct observation of students and residents in interactions with patients was used as a tool to teach and provide feedback on integrating nonbiomedical issues in care.

The various learning experiences help students and residents develop knowledge (e.g., social science concepts) and technical skills (e.g., medical interviewing techniques) for developing an effective doctor-patient relationship as well as appropriate attitudes toward patients and their relationships with patients. Being committed to serve the needs of patients, for example, encourages the development in students of an attitude that places the patient's situation, needs, and perception of illness at the center of the relationship. As one student said:

> You can't just look at their [patients'] disease process here...you can do all the best treatments and medicine in the world, but if you aren't considering any of the outside things, they are not going to get well. The students themselves are service-driven and interested in doing things to benefit the community and you put those people into a population that is very poor and needs a lot of support and it's just one of those things that you incorporate into everything that you do.

The relationship of the physician to the community is taught in several ways. Through community-based clinical education, students and residents learn about the impact of broad social, political, cultural, and economic factors on the health of individual patients. Clinical work in free clinics for the poor, for example, teaches about the effects of poverty on health, and experiences in a factory clinic teach about occupational health issues. Student-run, faculty-supervised clinics for underserved or poor communities reflect the service orientation of the schools. The same longitudinal placements mentioned above that encourage the development of long-term relationships with patients also allow opportunities to learn about the community and its needs and resources. Also, public health and community health projects promote a sense of individual responsibility for the health of the community at large and teach about ways in which individual practitioners can help to improve it. Such projects may include campaigning for placement of new traffic signals at a dangerous intersection or teaching smoking cessation or nutrition classes to public school students or community groups. Students and residents also benefit from participation in programs sponsored by medical schools to address specific community needs, such as prenatal care for women in poverty.

In their attention to assessing the needs of the community or region, the medical schools demonstrate the importance of responsibility for the health of populations. Some schools have formal mechanisms in place to assess and respond to epidemiological and demographic conditions

and health care needs as perceived by the public. One is developing a rural medical education program. The participation of people from the local community as teachers in the classroom brings community values and viewpoints to the students. An example of this is a course dealing with cultural diversity that brings in community members as teachers. In one school, the physician-community relationship also is modeled by the school itself, which is community-based. With no academic health center and approximately 500 part-time faculty who are community practitioners, the school is an integral part of the community, and has "no inside, outside, or edges." The school has only sixty full-time faculty, including several who staff the school's three community health centers, which are in surrounding communities and where students complete their longitudinal ambulatory care experience.

Third, *the relationship of the physician to other health care practitioners* is modeled through interdisciplinary team teaching in the classroom and experienced in clinical settings that encourage cross-disciplinary teamwork and cooperation. This allows students and residents to learn about the work of other practitioners and see how collaboration across disciplines can permit comprehensive attention to a wide spectrum of individual health care needs. In the five schools, disciplines other than medicine and the basic sciences that are involved in preclinical and clinical medical education include nursing, allied health (physical, speech, and occupational therapy), psychology, social work, health education, health policy, law, and the humanities (philosophy, religion, history, and literature). In one case, a nurse educator teaches clinical skills to students during the surgery clerkship: "the students gravitate to her for advice, which emphasizes the team approach in this profession that we're in." In a residency program at another school, a social worker is responsible for portions of a required seminar series that address the patient centered clinical method and whole person medicine.

Finally, *the faculty-student relationship* is of critical importance. The nurturing of students as they develop personally and professionally is a major theme within these five schools and serves as a model for the three other relationships that students are learning to develop. Such nurturing is apparent in mentoring programs, student support programs, and cooperative learning environments. Within longitudinal clinical experiences and community preceptorship programs, students are able to develop close relationships with faculty and preceptors. At several of the schools, students described the atmosphere as "being like one big family." Another student commented:

> The atmosphere in general is different here than it is in a lot of places. It's more of a helping atmosphere than competitiveness. I remember the first day we came to medical school and one of the deans told us, "Look beside you. That person on either side of you--you're responsible for him. Help him, and if they're not doing good and having a hard time, then it is up to you to help out." I think that attitude was instilled in us.

Many faculty described teaching as their primary responsibility and described the satisfaction they felt in helping students and residents develop both personally and professionally. Students described their relationships with faculty as being friendly and informal, with faculty easily accessible and amenable to discussing both educational and personal problems.

These four relationships are not attended to discretely, but rather are interwoven and integrated in the milieu and the curriculum. One element of the curriculum may address all four. In one school, for example, students are involved in a two and one-half year rotation in a community health center that is staffed by full-time medical faculty. During this rotation, which involves spending one day per week in the community health center, students develop their own patient caseload. This experience helps them learn to develop relationships with and learn about the lives of individual patients, recognize community health needs, work with practitioners from other disciplines as well as with office staff, and develop relationships with faculty mentors. In another school, the medical humanities program consists of a series of seminars that extends across all four years of the curriculum and is team taught by humanities faculty and clinical faculty. This program promotes critical thinking about issues across the four relationships, from ethical issues in the doctor-patient relationship to community health policy issues, the contribution of the humanities

to medical practice, and the importance of attending to personal growth and awareness in the process of becoming a physician.

Facilitators and barriers

The primary factors that facilitate the maintenance of programs that teach an integrated approach to care are (1) the presence of a strong, explicit, shared mission or philosophy, as described above, and (2) effective leadership to maintain a focus on the mission of the school and facilitate accomplishment of educational goals that are in concert with that mission. In one school, for example, strong leadership on the part of the academic dean is necessary in the continual struggle to ensure that the curriculum maintains its focus on an integrated, primary care perspective and does not yield to pressures to focus more intensively on biomedical science and subspecialty clinical care. Several interviewees cited increased national attention to the need for primary care practitioners as an important factor in motivating the school to maintain a perspective beyond the biomedical. An integrated approach to care was described by some respondents as almost synonymous with primary care.

Interviewees acknowledge that their programs are not ideal and that they continually try to address more fully an integrated approach to care. However, with the exception of inadequate funding, which was mentioned by several interviewees as a barrier, in general respondents viewed adverse conditions less as barriers and more as difficulties to be worked out, worked around, or approached from a different angle. Perhaps because of the strong presence of institutional mission and philosophy, faculty and administrators proceed with program development regardless of impediments, gathering together like-minded people, breaking down interdepartmental fences, continually looking for resources within and outside the institution, and continually moving forward. Several people mentioned the need for support to conduct research to (a) further develop integrated approaches to patient care and effective methods to teach such approaches to students and residents, and (b) evaluate the outcomes of integrated patient care approaches and teaching methods. Faculty development also was described as a necessity in promoting an integrated approach to care.

Discussion

This study represents an important early step in delineating ways to help medical students learn an approach to patient care that expands the biomedical model by integrating attention to social and psychological factors in health and illness. Our findings suggest that (a) institutional mission and philosophy play an important role in focusing curricular attention on non-biomedical issues in care, (b) teaching an integrated approach to care involves attention to four relationships within medicine and medical education, within which a more comprehensive range of influences on health can be addressed, and (c) several factors--including a shared mission or philosophy, effective leadership, and increased attention to primary care--facilitate the maintenance of programs that address an integrated approach to care. These findings embody and extend the findings of previous work regarding the importance of teaching interviewing, patient relationship skills, and population-based approaches to health care and the importance of patient-centered, integrated, developmental, and community-based curricula.

The most striking finding was the importance of a broad-based, strongly held, shared mission or philosophy in focusing attention on non-biomedical concerns. In each case, the philosophy or mission promotes a perspective that focuses outward toward the community or region and its people and toward patients within the context of their daily lives and lifelong development. The outward focus toward the community, apparent in all of the schools to varying degrees, is exemplified by the school that was described as having "no inside, outside, or edges" and is in fact part of the community rather than just situated within it. This community perspective involves orienting the schools' activities to place the needs of patients, populations, and communities at the center of the educational process. Such an orientation does not permit faculty or students to focus exclusively on the biomedical problems of patients, but requires that the patient

be viewed holistically. Instead of learning hospital-based, disease-centered medicine, students learn about illness and the many variables--associated with patient, practitioner, community, economy, culture, and so on--that influence health and illness. Similarly, a focus on the patient within the context of his or her daily life and lifelong developmental process encourages attention to the experience and meaning of the illness to the patient and results in educational programs that help students learn how to practice patient-centered clinical medicine.

The interweaving of attention to the four relationships (i.e., physician-patient, physician-community, physician-other practitioners, and faculty-student) throughout the curricula at the five schools suggests that such attention grows out of the underlying mission or philosophy that permeates and influences the overall activities of the school. Although these relationships are interwoven even in classroom teaching, it is in community-based clinical education that they are most closely intertwined. It is there that students can establish longitudinal relationships with patients and preceptors, deal with non-biomedical influences on health and illness that arise from the community, and work collaboratively with practitioners from other health and human service professions to address a wide variety of health-related problems. That each school is somewhat different in the way it addresses the four relationships and teaches students an integrated approach suggests that curriculum in this area must grow out of the history, culture, and characteristics of each school. Such a curriculum cannot be packaged and replicated but must be constructed of the fabric of the individual school by the administrators, faculty, students, patients, and community.

In carrying out this multiple case study, we learned about a great variety of ways in which students can learn non-biomedical health care strategies that can begin to address the complexity of today's health care problems. The value of this study, however, lies less in the description of specific educational methods for teaching students an integrated approach to care than in the construction of a larger framework for considering ways to teach such an approach. Individual schools must develop specific methods that are congruent with their unique characteristics. We hope that, in pointing out the significance of an underlying institutional mission and philosophy and four essential relationships through which a broader approach to care can be addressed, we have provided the beginnings of a framework that faculty and administrators can use to develop their own unique programs.

Much work remains to be done to further define ways to prepare practitioners to address a wider set of health care needs within medicine's expanding role. Fruitful avenues of research might be to (1) study the processes by which a shared institutional mission is achieved, (2) explore outcomes--for patients, students, and faculty--of programs such as the ones studied here, (3) examine more broadly how other medical schools and other health professions schools address teaching students a more integrated approach to care, and (4) for purposes of comparison, conduct case studies of schools identified as *not* addressing an integrated perspective.

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